



# Global distribution and dynamics of economic freedom: Non-parametric approach



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## ABSTRACT

The paper exploits the distributional dynamics and structural changes in the endogenous distribution of economic freedom across countries over time by utilizing the Rosenblatt–Parzen Kernel density estimator compared to the original distribution based on the methodology proposed by the Heritage Foundation. We utilize the distribution of economic freedom as a tool to identify which policies enhanced the overall level of economic freedom. We develop the distribution of endogenous economic freedom by decomposing effects of economic freedom on the level of income per capita in IV–2SLS estimation framework for a panel of 134 countries to identify the effect of institutions of economic freedom on the level of per capita income. Structural estimates indicate that improvements in the monetary, fiscal, and labor freedom exert the strongest direct effect on the level of economic freedom and indirect effect on the level of real income per capita. Our study demonstrates considerable differences between the original and endogenous distributional dynamics of economic freedom over time. In exploiting the non-parametric setting of endogenous economic freedom, we identify a recent emergence of twin-peak distribution across countries where developing nations have improved the level of economic freedom considerably compared to the initial year.

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## 1. Introduction

Towards the end of the 1980s, the world underwent significant changes in terms of economic freedom; liberalization, deregulation and privatization became the main guidelines of future development. Since the fall of the Berlin wall in 1989, the idea of freedom has been sweeping the world to eventually adopt the forms of political democracy and free markets. It seems that in the long run, freedom works and people tend to realize that. I have no doubt that in the future even more people will live in the free world than today. However, in the short run the outcome is less predictable due to the impact of financial and economic crisis, and it will depend mainly on our understanding and our own interest to learn how good a free society is. The outcome largely depends not only on our understanding of the concept of economic freedom and the methods of its measurement, but also on distributional dynamics of economic freedom in order to identify the main structural changes in cross-country distribution over time.

A classical approach to estimate the relationship between economic freedom and welfare is to adopt regression analysis and identify the effect of economic freedom and its components on the economic

performance of countries over specific time period, and observe which components contribute most to higher level of income. However, such empirical evidence does not indicate whether the level of economic freedom rose or declined over time, and also disallows empirical researchers and policymakers to identify countries that underwent the most rapid improvement as well as rapid decline in the level of economic freedom over time, since establishing cross-country distribution can unveil the relative efficiency of policies that either enhance or hinder the institutions of economic freedom. The construction of cross-country distribution of economic freedom over time clearly facilitates the identification of policy mechanism enhancing the overall level of economic freedom and particular countries that have improved the rank in the distribution over time with respect to key policy setting which accounts for the change in the distribution over time. Therefore, our primary goal is to show the distribution of economic freedom over time by utilizing the Rosenblatt (1956), Parzen (1962) Kernel density estimator in order to better observe the dynamics and structural changes in the distribution of the economic freedom over time (1). Our paper also examines endogenous distribution of economic freedom over time by disaggregating the specific components of the Index of Economic Freedom rather than relying upon its arbitrary assumption of equivalent effect of each component on overall economic freedom (2). We seek to point out the differences between distribution of original and endogenous level of economic freedom in order to identify the structural changes in cross-country distribution of economic freedom

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over time. To our knowledge, such analysis has not been conducted so far.

The paper is structured as follows. Section 2 outlines the importance of economic freedom. Section 3 provides contributions within the economic freedom literature regarding the distributional dynamics of economic freedom over time. In Section 4, we explain the estimation framework for the distribution of endogenous economic freedom over time by utilizing the Rosenblatt–Parzen Kernel density estimator. The aim of Section 5 is to show data and methodology used for decomposition of the effect of economic freedom on economic performance, and Section 6 provides a summary of the empirical findings. Section 7 describes the distributional dynamics and structural changes in the endogenous distribution of economic freedom across countries over time compared to the original distribution based on the methodology proposed by the Heritage Foundation. Section 8 provides a set of direct normality tests for empirical distribution of endogenous economic freedom across countries. Finally, Section 9 proceeds with concluding remarks.

## 2. The importance of economic freedom

Economic freedom is different from political and civil freedom. Political freedom means that citizens are free to participate in the political process on equal terms, that there exists competition between parties, and that elections are fair. Civil freedom deals with the questions of freedom of religion, freedom of assembly and freedom of speech. Understanding of economic freedom, however, tends to be more complex and often quite deficient, because some regulations and state interventions always remain hidden from the public that lacks sufficient economic knowledge to grasp completely the meaning of freedom. For example, in transition countries the majority of the population does not understand what life in a world of freedom should be like, as they are only familiar with the planning system (Aristovnik, 2008). However, the problem is much deeper, since the same degree of economic freedom may be understood quite differently even among the people with sufficient economic knowledge. It is a relation between the degree of freedom and the value of this freedom as perceived by an individual.

The cornerstones of economic freedom are protection of private property, personal choice, freedom of exchange and freedom to compete (Gwartney and Lawson, 2003). In other words, individuals in an economically free society would be free to work, produce, consume, and invest in any way they choose under the rule of law and protection by the state (Miller et al., 2012). This requires government to perform one type of action and refrain from engaging in others. There is a considerably wide agreement among scholars today what economic freedom includes (Gwartney et al., 1996; Hanke and Walters, 1997; Johnson et al., 1998): (i) security of property rights, (ii) freedom to engage in voluntary transactions, (iii) access to sound money, (iv) freedom to engage in voluntary transactions outside the borders, (v) freedom to compete, and (vi) personal choice.

The following two indexes of economic freedom are the most comprehensive today. Index of Economic Freedom of the World created by Fraser Institute is divided into five areas and twenty-three components; each component is placed on the scale from zero (no freedom) to ten (full freedom). Index of Economic Freedom, published by the Heritage Foundation and the Wall Street Journal, is divided into ten economic freedoms, grouped into four broad categories. Each of the freedoms is scored on a scale of zero (no freedom) to one hundred (full freedom). Indexes can identify the extent to which individuals are free to choose for themselves and engage in transactions by having their rightly acquired property protected from invasions of others.

For economists economic freedom is often understood as a proximate or intermediate goal, while improved welfare stands as the final goal. With the publication and easy availability of data on economic

freedom many authors tested the relation between economic freedom and economic wellbeing. Countries that have higher economic freedom also tend to have higher rates of growth (Azman-Saini et al., 2010; Berggren, 2003; Carlsson and Lundstrom, 2002; Cole, 2003; Dawson, 2003; Easton and Walker, 1997; Gordillo and Alvarez, 2003; Justesen, 2008; Schaefer, 2003; Scully, 2002) and are more prosperous with respect to well-being as measured by GDP per capita (Farr et al., 1998; Hanke and Walters, 1997) than those that have less economic freedom. However, there has also been discussion, arguing that a level of economic freedom does not have a significant effect on growth (Adkins et al., 2002; De Haan and Sturm, 2000, 2001) since the effect of freedom on growth depends also on the direction and magnitude of the change in freedom (Cole, 2003; Farr et al., 1998).

Economic freedom has also positive influences on many other aspects of human well-being like lower unemployment (Grubel, 1998; Gwartney et al., 1997), higher life expectancy (Esposito and Zaleski, 1999), lower infant mortality (Grubel, 1998), more equal income distribution (Berggren, 2003; Scully, 2002), lower poverty (Connors and Gwartney, 2010), better quality of healthcare and education (Stroup, 2007) and better ecological consequences (Norton, 1998). It seems that economic freedom is associated with many socio-economic benefits.

## 3. Distributional dynamics of economic freedom over time

In order to identify the main structural shifts in the distribution of economic freedom over time a detailed examination of distributional dynamics is needed. The literature review shows that distributions were mainly done by simply breaking the overall number of countries into quintiles, sorted from the least free to the freest, in order to show that economic freedom is associated with many socio-economic benefits. For example, countries in higher quintiles with higher index score enjoy higher standard of living (Gwartney et al., 2011; Miller et al., 2012). Distribution of economic freedom by income per capita across countries considers distribution in quintiles as a pooled average over time. It neglects the distribution across country groups over time and between specific levels of economic freedom within particular groups.

A step forward was done by Kim (2011, 2012) by showing how a global distribution of economic freedom changes over time. The authors rank the countries based on their index score into five different categories of economic freedom (repressed: below 49.9; mostly unfree between 50 and 59.9; moderately free between 60 and 60.9; mostly free between 70 and 79.9; free beyond 80). The main advantage of such distribution of economic freedom, compared to quintile distribution, is the observation of the empirical pattern which allows us to identify the structural shifts of countries and regions into upper or lower categories of economic freedom. A notable shortcoming is the inability to observe (annual) improvements in economic freedom within particular categories of economic freedom due to preliminary definition of each category of economic freedom. Despite the ability to observe more distributional dynamics we still cannot identify if countries form particular clusters by arising from a comparable level of economic freedom. Classification of countries within categories precludes us from seeing the impact of improvements in a score rank for a particular country within the specific category on the overall distribution of freedom. Therefore, the distribution of economic freedom over time by utilizing the Rosenblatt–Parzen Kernel density estimator will be used in our article. This will enable us to better comprehend the internal dynamics within the particular category of economic freedom and the structural shifts in the distribution of economic freedom, as measured by Heritage foundation, over time.

To examine the effect of a particular index subcomponent on the distribution of economic freedom over time an additional step

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